



A.D. 1852 N° 14,030.

S P E C I F I C A T I O N

OF

WILLIAM SYMINGTON, CHARLES
FINLAYSON, AND JOHN REID.

FLUES, HEATING AIR, AND EVAPORATING
LIQUIDS.

L O N D O N :

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Flues, Heating Air, and Evaporating Liquids.

SYMINGTON, FINLAYSON, AND REID'S SPECIFICATION.

TO ALL TO WHOM THESE PRESENTS SHALL COME, we, WILLIAM SYMINGTON, of Trafalgar Place, West Hackney Road, in the County of Middlesex, Gentleman, CHARLES FINLAYSON, of Manchester, Engineer, and JOHN REID, of the same place, Gentleman, send greeting.

5 WHEREAS Her present most Excellent Majesty Queen Victoria, by Her Royal Letters Patent under the Great Seal of the United Kingdom of Great Britain and Ireland, bearing date at Westminster, the Twenty-second day of March, One thousand eight hundred and fifty-two, in the fifteenth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto us,
10 the said William Symington, Charles Finlayson, and John Reid, our exors, admors, and assigns, Her especial license, full power, sole privilege and authority, that we, the said William Symington, Charles Finlayson, and John Reid, our exors, admors, and assigns, or such others as I, the said William Symington, Charles Finlayson, and John Reid, our exors, admors, or assigns,
15 should at any time agree with, and no others, from time to time and at all times during the term of years therein expressed, should and lawfully might make, use, exercise, and vend, within England, Wales, and the Town of Berwick-upon-Tweed, and in the Islands of Guernsey, Jersey, Alderney, Sark, and Man, and also in all Her said Majesty's Colonies and Plantations abroad,
20 our Invention of "IMPROVEMENTS IN FLUES, AND IN HEATING AIR, AND IN EVAPORATING CERTAIN LIQUIDS BY HEATED AIR;" in which said Letters Patent is contained a proviso that we, the said William Symington, Charles Finlayson, and John Reid, some or one of us, shall cause a particular description of

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the nature of our said Invention, and in what manner the same is to be performed, by an instrument in writing under our hands and seals, or under the hands and seals of some or one of us, to be inrolled in Her Majesty's High Court of Chancery within six calendar months next and immediately after the date of the said in part recited Letters Patent, as in and by the same, 5 reference being thereunto had, will more fully and at large appear.

NOW KNOW YE, that in compliance with the said proviso, we, the said William Symington, Charles Finlayson, and John Reid, do hereby declare that the nature of our said Invention, and the manner in which the same is to be performed, are fully described and ascertained in and by the following 10 statement thereof, reference being had to the Drawings hereunto annexed, and to the figures and letters marked thereon, that is to say:—

Our Invention consists,—

First, of improvements in the construction of flues.

Secondly, our Invention consists of improvements in apparatus used for 15 heating air and in evaporating certain liquids by heated air.

And in order that our Invention may be most fully understood and readily carried into effect, we will proceed to describe the means pursued by us.

DESCRIPTION OF THE DRAWINGS.

Figure 1 shows a longitudinal section of a flue; Figure 2, a transverse 20 section through the line E, F, Figure 1; Figure 3 is a transverse section through the line A, B, Figure 4; and Figure 4 is a plan consisting of an external casing of metal and an internal coating of clay or earthenware tubes of short length, the object in thus combining metal with the use of short 25 lengths of clay or earthenware tube is to obtain the strength of the metal and the advantage of the clay and earthenware tubes in such form that, being in numerous parts, an injured clay or earthenware tube may be readily removed and replaced by another. The earthenware tubes may be made to come simply in contact end to end, or they may be so made as to enter each other at the ends, as is well understood in making clay or earthenware tubes for 30 other purposes. The metal tube may be made of one length or it may be of several lengths, for the convenience of separating the parts to get out a defective clay or earthenware tube which requires to be replaced; this will be understood by reference to the Drawing at a^* , a^* , where the exterior metal tube is of two parts, which are connected by another metal tube of rather 35 larger diameter, as is shown; such combined tubular flues will be found very advantageous for heating air for the warming of apartments and other places where it is desired that the metal tube against which the air comes should not

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be so heated by the fire as to injure or decompose the air which comes in contact with the metal. We would remark that we are aware that metal flues have before been lined with clay or earthenware tubes, but in such cases the clay or earthenware tubes have been in one length agreeing
5 in length with the metal flue, and, therefore, in the case of one part becoming injured or defective, the whole clay or earthenware tube has required to be removed. It should therefore be understood that this part of our Invention consists of using several comparatively short lengths of tubes of clay or earthenware to line a metal flue in order to admit of those
10 parts quickly injured being removed and replaced without the necessity of removing other parts less liable to become injured, and such combined flues may be used under a great variety of circumstances, and whenever metal flues are required to be protected from being so greatly heated as they otherwise would be if the metal were unprotected by clay or earthenware tubes.

15 The apparatus shown in Figures 1, 2, 3, and 4 is for heating air on a level with or below the floor of a room or other place, *a* being the fireplace; *b*, the compound flue; *f*, the junction of the two parts of the metal flue, as above mentioned; *C*, air flue made of earthenware or brick or stone, the flue *f* being supported over it upon the cross bars *C**. Through these flues *C* the air
20 passes and becomes heated, and then passes in any direction according as suitable pipes or passages conduct it, and a supply of air is obtained to the flue *C* by valves *d*, *d*, by which the quantity allowed to pass can be regulated, and, by having gratings or openings in the floor above, the air from the space below, and which is heated by the passage of the flue *b*, may pass freely to
25 the room above and heat it.

Figures 5 and 6 show two sections of a steam boiler with tubular metal flues through it, in which are placed a series of short tubes of clay or earthenware of different diameters, by the use of which linings a great advantage will be obtained.

30 Figure 7 shows a longitudinal section of an apparatus for heating air and evaporating saccharine liquids. *A*, pipes which the air while passing through becomes heated; *B*, discs, which we prefer to be about forty in number, and attached to a spindle through their centre, and kept three quarters of an inch apart by means of collars. The spindle rests in bearings on either side of the
35 pan. The spindle is made to revolve from ten to fifteen times per minute by means of a pulley and band, causing the discs to continually change the point of immersion, which insures the whole of their surface being covered with the fluid, at the same time the heated air is made to pass between the discs as they emerge from the fluid in the pan, which causes a rapid evaporation of the

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watery particles. C, flue passing from the heating apparatus under the pans 1 and 2, under also the clarifier; D, damper to shut off the heat of the fire from the pan No. 1 when required; E, cold air inlet; F, passage for conducting the heated air to the discs; G, covering to pan, which is to be arranged so as to admit of the liquid being introduced and removed from the pan; H, pipe for the escape of vapour. We would remark that we are aware that discs have before been employed in pans for evaporating saccharine liquids, and heated air has been employed in conjunction therewith to aid the evaporation, we do not, therefore, claim the same when separately considered, this part of our Invention being peculiar in having the same means or furnace to heat the air-heating apparatus and also the pans, as shown. 5 10

Having thus described the nature of our said Invention, we would have it understood that we do not confine ourselves to the details herein described so long as the peculiar character of either part of our Invention be retained. But what we claim is,— 15

First, the improvements herein described of combining the use of external metal flues with internal linings composed of short lengths of clay or earthenware tubes. And,

Secondly, we claim the means of heating air and evaporating certain liquids by heated air. 20

In witness whereof, I, the said William Symington, have hereunto set my hand and seal, this Fourteenth day of September, One thousand eight hundred and fifty-two.

W. (L.S.) SYMINGTON.

AND BE IT REMEMBERED, that on the Fourteenth day of September, in the year of our Lord 1852, the aforesaid William Symington came before our said Lady the Queen in Her Chancery, and acknowledged the Specification aforesaid, and all and every thing therein contained and specified, in form above written. And also the Specification aforesaid was stamped according to the tenor of the Statute made for that purpose. 25 30

Enrolled the Eighteenth day of September, in the year of our Lord One thousand eight hundred and fifty-two.

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Printers to the Queen's most Excellent Majesty. 1857.

FIG. 4.

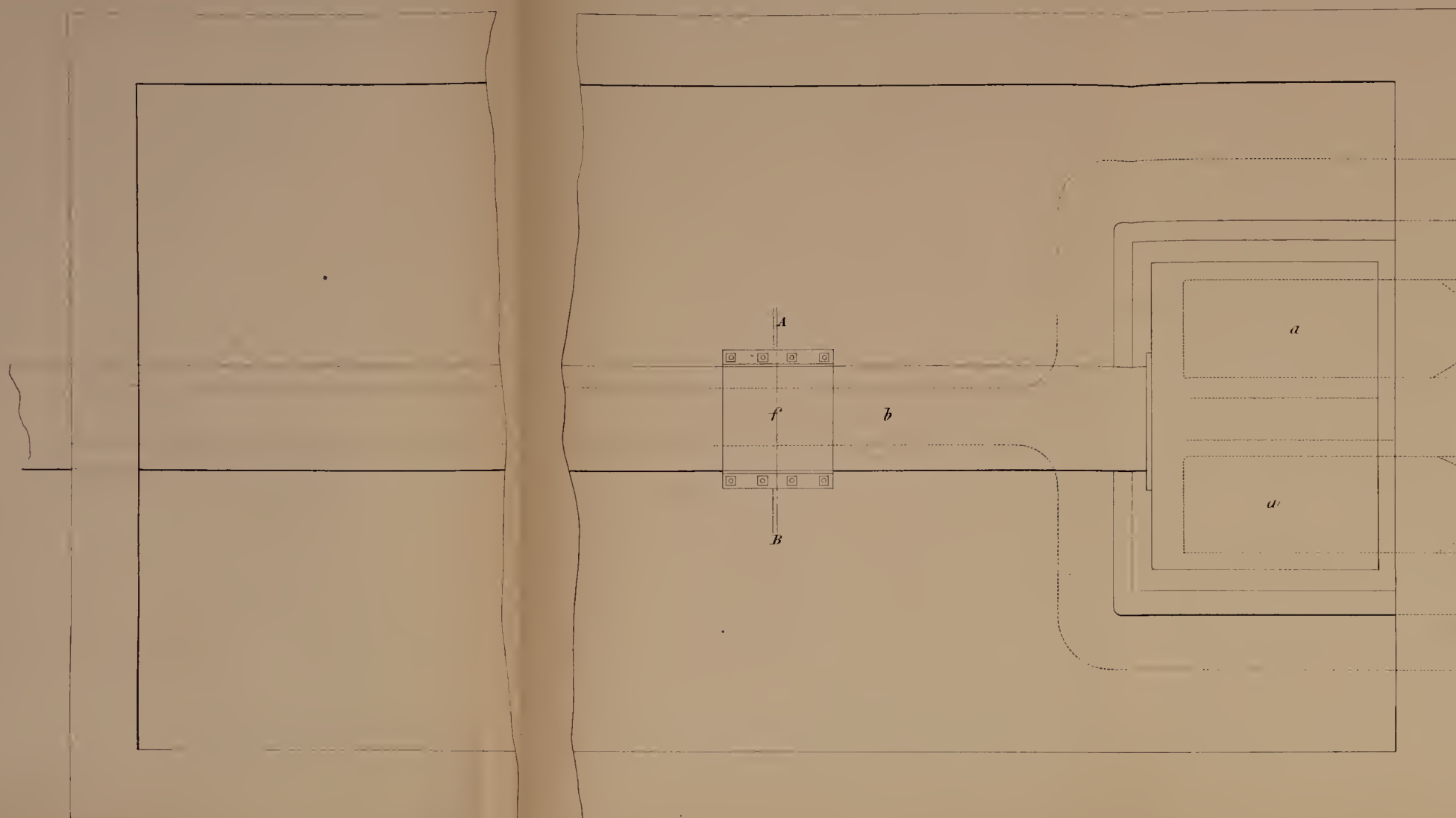


FIG. 3.

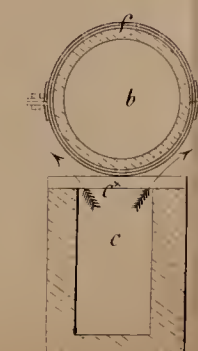


FIG. 1.

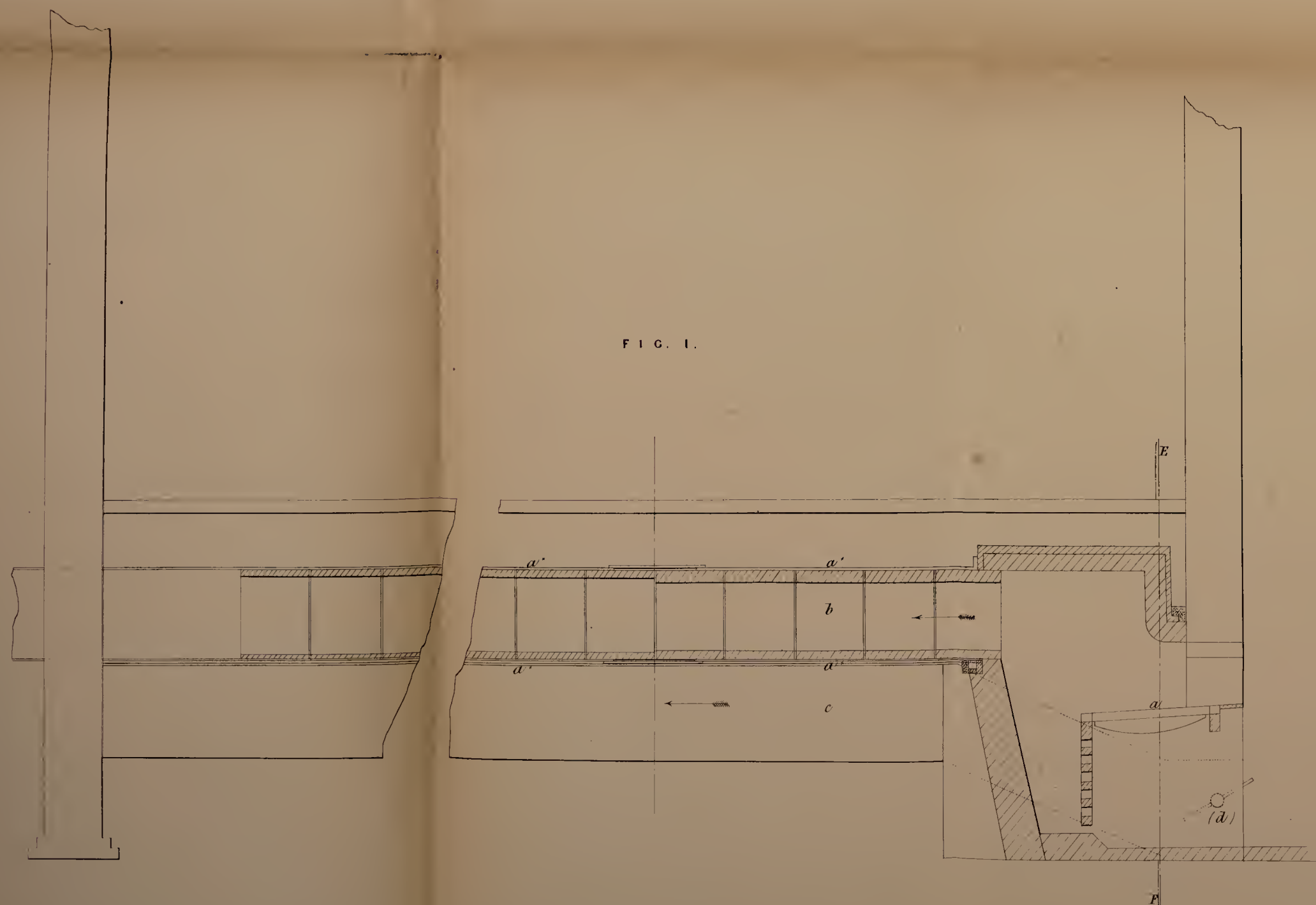
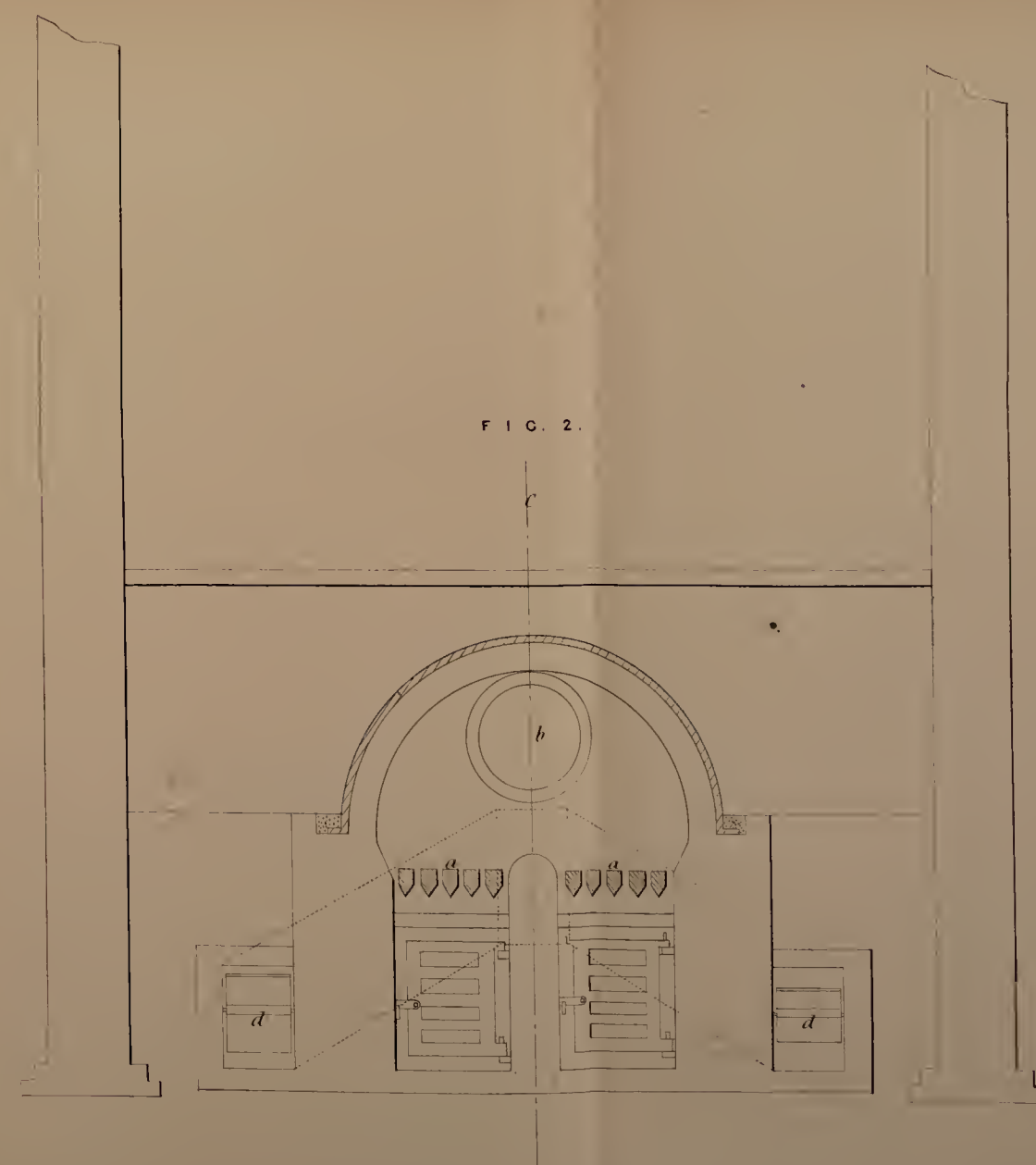


FIG. 2.



The enrolled drawing is partly colored.

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 SYMINGTON, FINLAYSON & REID'S SPECIFICATION.

FIG . 5.

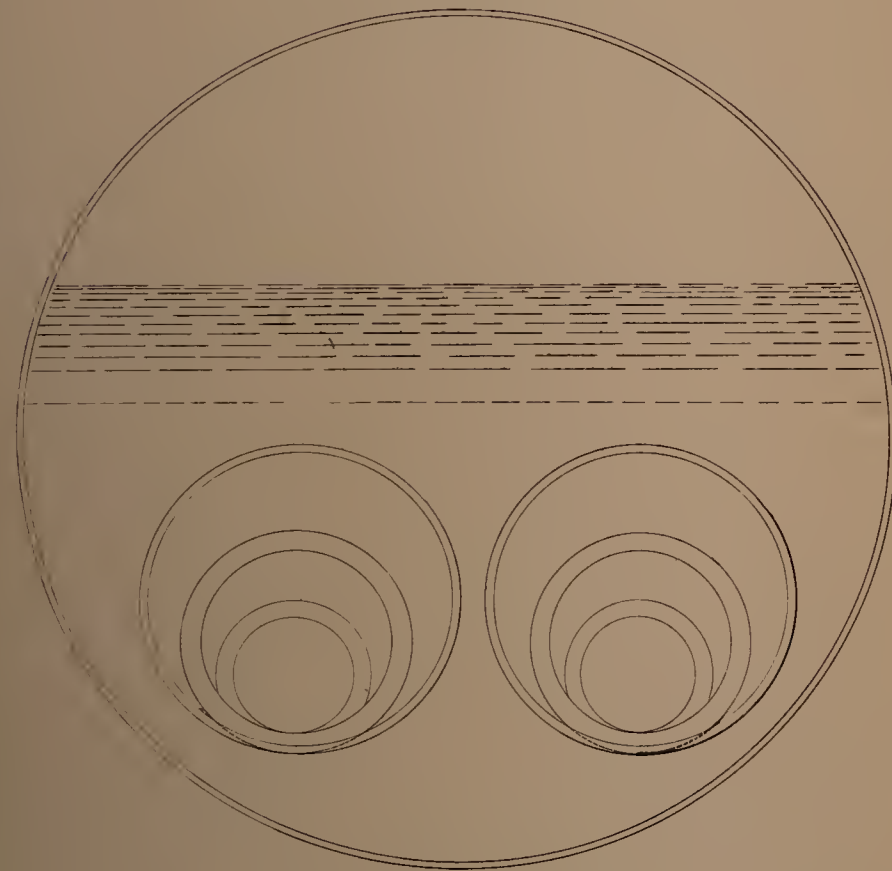
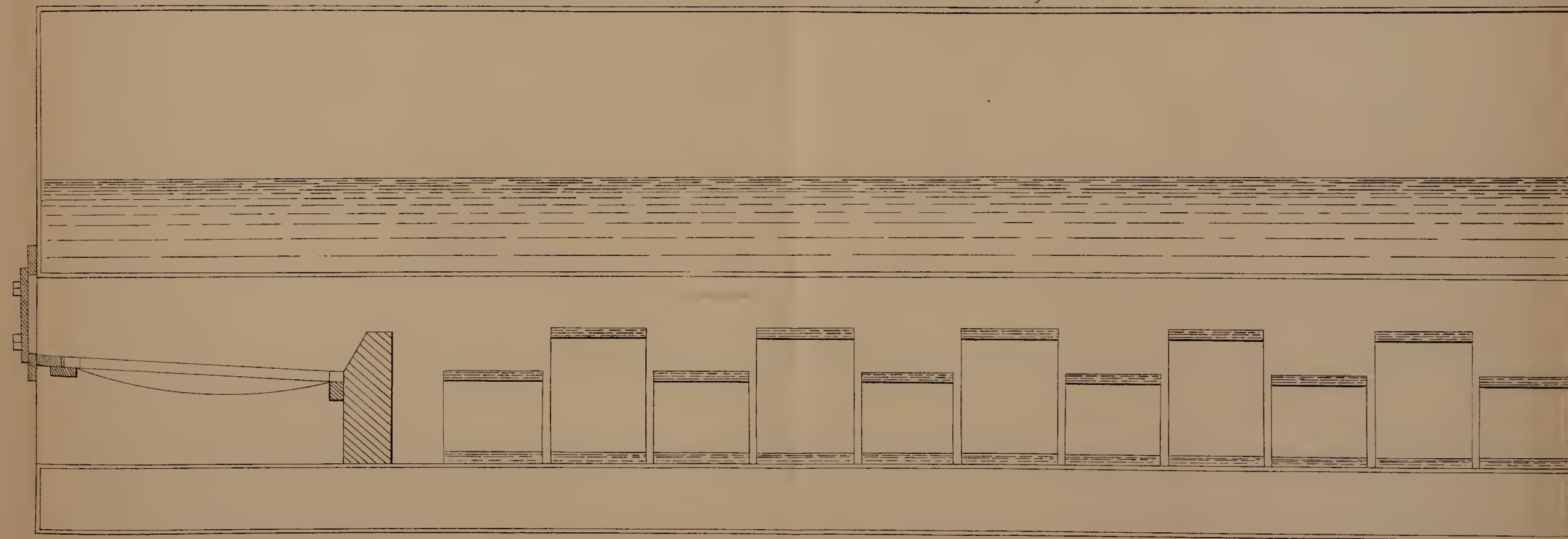


FIG . 6.



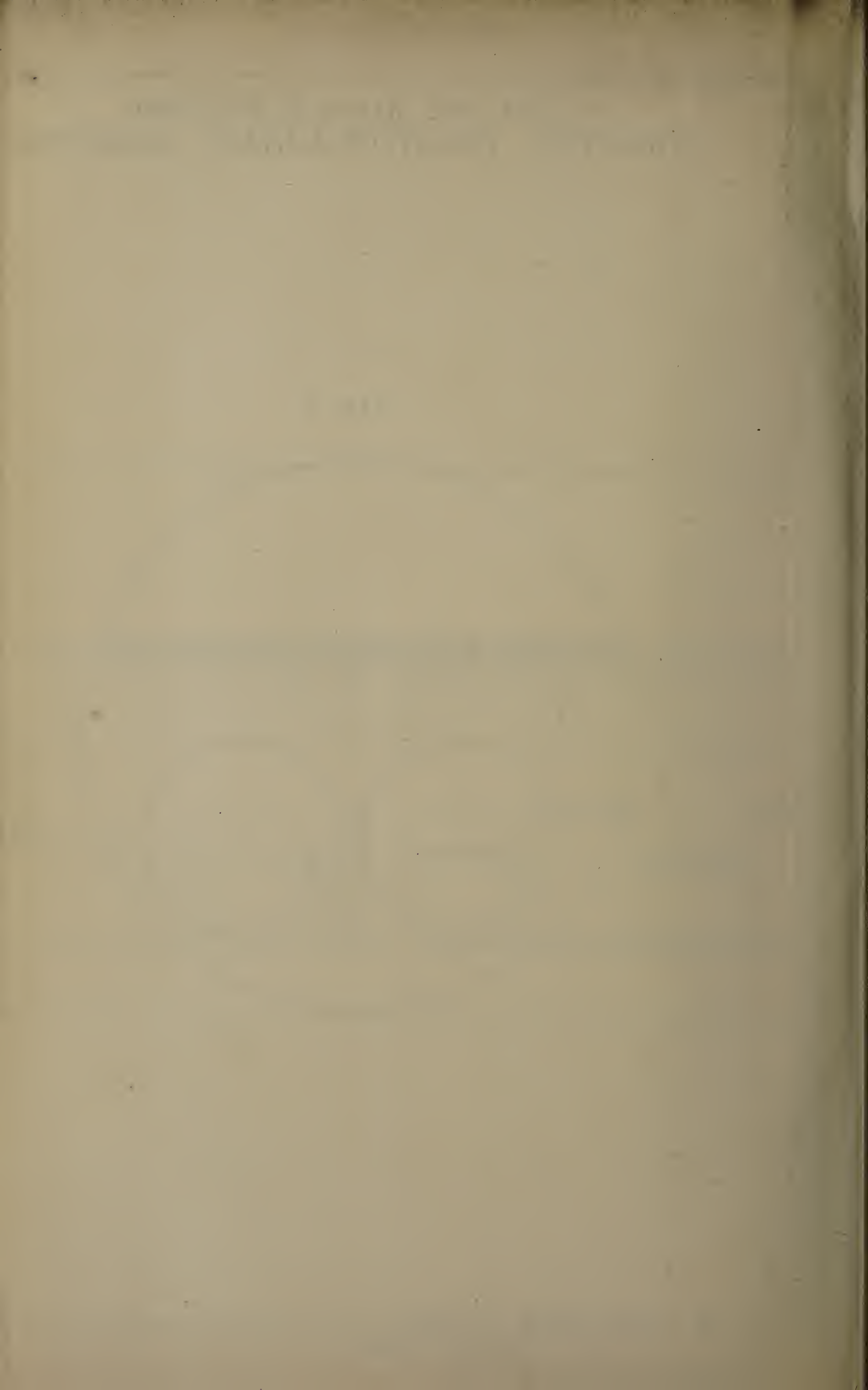
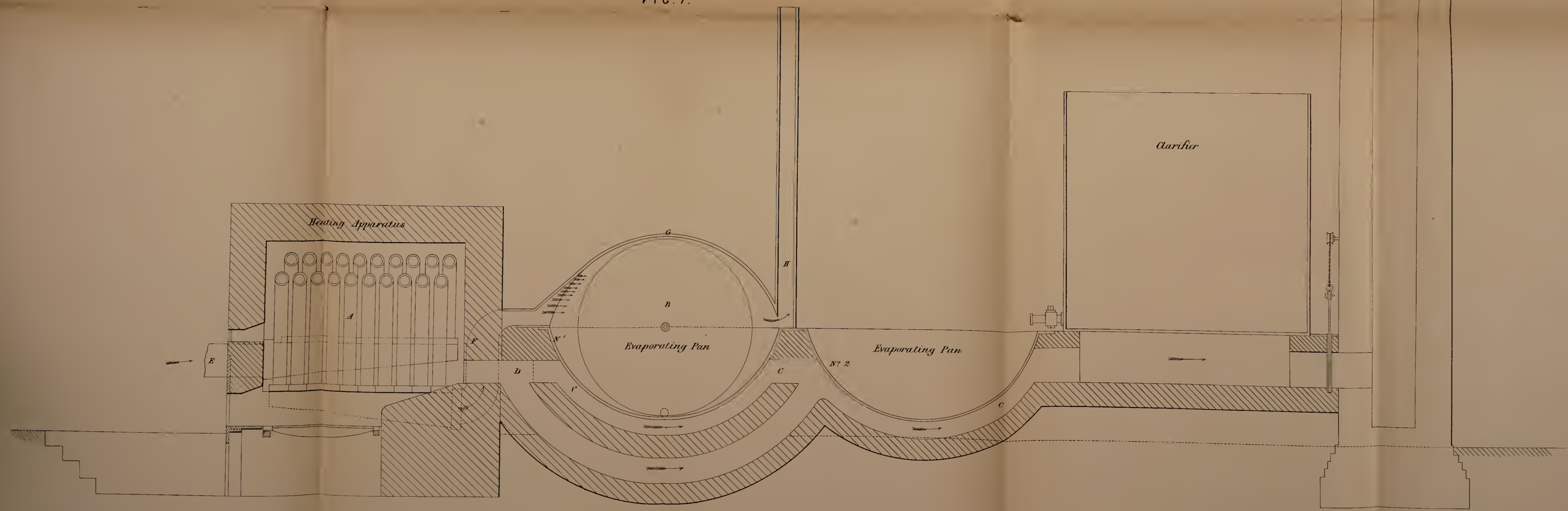


FIG. 7.



The enlited drawing is colored.

